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Short Communication

Breeding for quality characters in *Panicum maximum* Jacq.

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Panicum maximum is noted for its good protein content (4 to 15%), *in vitro* dry matter digestibility (41 to 72%) and high yield (62.2 q/ha dry matter). A recent collection of germplasm from Southern and North Eastern parts of India at IGFRI, Jhansi, exhibited that this diversity is fixed in these apomictic lines. The present study deals with extent of diversity for quality characters and their association with morphologial characters among the representative lines of these groups.

Forty nine germplasm lines of *Panicum maximum* were grown in two replications of single row of eight tussocks each at a distance of one meter between rows and 75 cm between tussocks. Observations were recorded on all the lines for five plant characters but crude protein content, ADF% and NDF% were determined following standard methods. Correlation coefficients among seven characters were determined by the standard statistical procedure.

Observations recorded for morphological and yield parameters revealed a wide range of variability (Table 1). The crude protein content ranged from 4.6% to 8.3% with an average value of 6.8%. Although annual types in general possessed higher protein content, the range of diversity was very low. There are reports of as high as 13.9 to 17.2% protein in different clones of guinea grass [1]. Thus, efforts for improving crude protein percent (CP%) are needed. In an attempt to improve quality by mutation, a non flowering mutant was developed with 6.04% protein, which was twice that of its flowering counterpart [2].

Table 1. Morphological and quality characters of 49 *Panicum maximum* genotypes

Character	Range	Mean	CV %
Plant Height (cm)	113.0-215.9	167.46	16.30
Stem Diameter (mm)	3.0-10.3	5.98	33.77
Leaf length (cm)	19.8-77.3	47.37	28.28
Leaf width (cm)	1.3-2.6	1.85	18.91
Green Fodder Yield*	1.17-8.59	4.26	39.90
Crude protein (%)	4.63-8.25	6.81	16.00
ADF (per cent)	39.06-45.41	42.41	4.17
NDF (per cent)	60.04-68.54	63.55	3.30

NDF = Neutral Detergent Fibre, ADF = Acid Detergent Fibre
*(per 8 tussocks kg)

Correlation studies revealed that plant height possesses positive correlation with stem diameter, leaf length, and leaf width. The stem diameter, leaf length and width were also positively correlated (Table 2).

Table 2. Correlation coefficients of morphological and quality characters in guinea grass

Characters	Plant height	Stem diameter	Leaf length	Leaf width	Green fodder yield	Crude protein	NDF
Stem dia.	0.48**						
Leaf length	0.50**	0.90**					
Leaf width	0.51**	0.85**	0.78**				
GFY	0.23	0.18	0.18	0.23			
CP(%)	−0.03	−0.23	−0.25	−0.21	0.10		
NDF	0.04	0.20	0.26	0.19	−0.17	−0.49**	
ADF	0.03	0.08	0.11	0.02	−0.10	−0.41**	0.48**

**Significant at 1% levels; GFY: Green fodder yield
NDF = Neutral Detergent Fibre, ADF = Acid Detergent Fibre

Neither of the quality characters showed significant correlation with any of the morphological characters under study. The crude protein percent showed negative correlation with ADF% and NDF%. The NDF% was positively correlated with ADF%. Hence, increase in CP% is likely to reduce the fiber content.

References

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